

CLAIMS:

1. In a wireless communications network having at least one access point (QAP) and at least one station (WSTA), a method for seamlessly granting polls for upstream and/or sidestream traffic while simultaneously sending downstream traffic from said QAP to said at least one WSTA, the method comprising the steps of:

(a) determining, at said QAP, whether there is at least one upstream traffic stream intended for transmission from said at least one WSTA to said QAP;

(b) determining, at said QAP, whether there is at least one sidestream traffic stream intended for transmission from said at least one WSTA to at least one other WSTA;

(c) negotiating an intended upstream data rate of transmission, at said QAP, for transmitting said at least one upstream traffic stream from said at least one WSTA, when said determination step (a) is true;

(d) negotiating an intended sidestream data rate of transmission, at said QAP, for transmitting said at least one sidestream traffic stream from said at least one WSTA to said at least one other WSTA, when said determination step (b) is true;

(e) computing polling and transmission times, at said QAP, for polling said at least one WSTA in accordance with said negotiated upstream and sidestream intended data rates of transmission;

(f) generating upstream virtual frames including said computed upstream polling and transmission times and airtimes allocated to the said WSTA, at said QAP, to transmit said at least one upstream traffic stream at said computed polling times;

(g) generating sidestream virtual frames including said computed sidestream polling and transmission times and airtimes allocated to said WSTA, at said QAP, to transmit said at least one sidestream traffic stream at said computed polling times; and

(h) scheduling the transmission of said upstream and sidestream virtual frames at said computed polling and transmission times.

2. The method of Claim 1, further comprising the steps of:

determining, at said at least one QAP, whether there is at least one downstream traffic stream intended for transmission from said at least one QAP to said at least one WSTA; and

if so, scheduling, at the QAP, the transmission of said at least one downstream traffic stream simultaneous with said steps (a) through (h) of Claim 1.

3. The method of Claim 1, wherein said negotiating step (c) further comprises the step of granting permission from said QAP to said at least one WSTA to transmit at least one upstream traffic stream at said negotiated upstream intended data rate.
4. The method of Claim 1, wherein said negotiating step (d) further comprises the step of granting permission from said QAP to said at least one WSTA to transmit at least one sidestream traffic stream at said negotiated sidestream intended data rate.
5. The method of Claim 2, wherein said upstream and sidestream traffic streams are parameterized traffic streams.
6. The method of Claim 2, wherein said downstream traffic stream is a parameterized traffic stream.
7. The method of Claim 1, wherein said polling frames are virtual frames.
8. A system for seamlessly granting polls for upstream and/or sidestream traffic while simultaneously sending downstream traffic from said (AP) to said at least one WSTA, the system comprising:

means for determining, at said QAP, whether there is at least one upstream traffic stream intended for transmission from said at least one WSTA to said QAP;

means for determining, at said QAP, whether there is at least one sidestream traffic stream intended for transmission from said at least one WSTA to at least one other WSTA;

means for negotiating an intended upstream data rate of transmission, at said QAP, for transmitting said at least one upstream traffic stream to said at least one WSTA, when said determination step (a) is true;

means for negotiating an intended sidestream data rate of transmission, at said at least one QAP, for transmitting said at least one sidestream traffic stream from said at least one WSTA to said at least one other WSTA, when said determination step (b) is true;

means for computing polling and transmission times, at said QAP, for polling said at least one WSTA in accordance with said negotiated upstream and sidestream intended data rates of transmission;

means for generating upstream virtual frames including said computed upstream polling and transmission times, at said QAP, to transmit said at least one upstream traffic stream at said computed polling times;

means for generating sidestream virtual frames including said computed sidestream polling and transmission times, at said QAP, to transmit said at least one sidestream traffic stream at said computed polling times; and

means for scheduling the transmission of said upstream and sidestream virtual frames at said computed polling and transmission times.

9. The system of Claim 8, further comprising:

means for determining, at said QAP, whether there is at least one downstream traffic stream for transmission to said at least one WSTA; and

a means for scheduling, at said QAP, the transmission of said at least one downstream traffic stream.

10. A system for seamlessly granting polls by an access point (QAP) for upstream and/or sidestream traffic from at least one station (WSTA) while simultaneously sending downstream traffic from said QAP to said at least one WSTA, the system comprising:

said QAP comprising:

a virtual frame generator for determining the time instants when the QAP is required to poll the at least one WSTA to transmit said upstream and/or sidestream traffic; and

a scheduler unit for computing polling and transmission times to poll said at least one WSTA.

11. A system for seamlessly granting polls by an access point (QAP) for upstream and/or sidestream traffic from at least one station (WSTA) while simultaneously sending downstream traffic from said (QAP) to said at least one WSTA, the system comprising:

a memory for storing a computer-readable code; and,

a processor operatively coupled to said memory, said processor configured to:

(1) determine, at said QAP, whether there is at least one upstream and/or sidestream traffic stream intended for transmission from said at least one WSTA to said QAP in a QBSS;

(2) negotiate an intended data rate of transmission for said at least one upstream and/or sidestream traffic stream;

(3) compute polling times for polling said at least one WSTA desiring to transmit said at least one upstream and/or sidestream traffic stream;

(4) generate virtual frames corresponding to said computed polling times; and

(5) schedule the transmission of said virtual frames at said computed polling times.

12. The system of Claim 11, wherein said processor is further configured to:
- determine, at said QAP, whether there is at least one downstream traffic stream for transmission to said at least one WSTA; and
 - schedule, at the QAP, the transmission of said at least one downstream traffic stream.